



SUBSTITUTE SEQUENCE LISTING

<110> Thibeault, Diane
Lamarre, Daniel
Maurice, Roger
Pilote, Louise
Pause, Armin

<120> Purified Active HCV NS2/3 Protease

<130> 13/082

<150> 60/256,031

<151> 2000-12-15

<160> 25

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1230

<212> DNA

<213> HCV

<220>

<221> CDS

<222> (1)...(1230)

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Met	Asp	Arg	Glu	Met	Ala	Ala	Ser	Cys	Gly	Gly	Ala	Val	Phe	Ile	Gly	
1				5					10				15			

ctt	gca	ctc	ttg	acc	ttg	tca	cca	tac	tat	aaa	gtg	ctc	ctc	gct	agg	96
Leu	Ala	Leu	Leu	Thr	Leu	Ser	Pro	Tyr	Tyr	Lys	Val	Leu	Leu	Ala	Arg	
			20					25					30			

ctc	ata	tgg	tgg	tta	cag	tat	tta	atc	acc	aga	gtc	gag	gcg	cac	ttg	144
Leu	Ile	Trp	Trp	Leu	Gln	Tyr	Leu	Ile	Thr	Arg	Val	Glu	Ala	His	Leu	
		35					40					45				

caa	gtg	tgg	atc	ccc	cct	ctc	aat	gtt	cgg	gga	ggc	gcg	gat	gcc	atc	192
Gln	Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg	Asp	Ala	Ile	
	50					55					60					

atc	ctc	ctc	acg	tgc	gca	gtc	cac	cca	gag	cta	atc	ttt	gac	atc	acc	240
Ile	Leu	Leu	Thr	Cys	Ala	Val	His	Pro	Glu	Leu	Ile	Phe	Asp	Ile	Thr	
65					70					75				80		

aaa	ctc	ctg	ctc	gcc	ata	ttc	ggt	ccg	ctc	atg	gtg	ctc	cag	gca	ggc	288
Lys	Leu	Leu	Leu	Ala	Ile	Phe	Gly	Pro	Leu	Met	Val	Leu	Gln	Ala	Gly	
			85					90						95		

ata	acc	aaa	gtg	ccg	tac	ttc	gtg	cgt	gcg	cag	ggg	ctc	att	cgt	gcg	336
Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile	Arg	Ala	
			100					105					110			

tgt	atg	ttg	gtg	cgg	aag	gct	gcg	ggg	ggt	cat	tat	gtc	caa	atg	gcc	384
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Cys	Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	Ala		
		115					120					125					
ttc	atg	aag	cta	gct	gcg	ctg	aca	ggg	acg	tac	gtt	tat	gac	cat	ctc	432	
Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu		
		130				135					140						
act	cca	ttg	cag	gat	tgg	gcc	cac	gcg	ggc	cta	cga	gac	ctt	gca	gtg	480	
Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val		
		145			150					155					160		
gcg	gta	gag	ccc	gtc	atc	ttc	tct	gac	atg	gag	gtc	aag	atc	atc	acc	528	
Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile	Ile	Thr		
				165					170						175		
tgg	ggg	gcg	gac	acc	gcg	gca	tgc	ggg	gac	atc	att	tca	ggg	ctg	ccc	576	
Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly	Leu	Pro		
			180					185					190				
gtc	tcc	gct	cga	agg	gga	agg	gag	ata	ctc	ctg	gga	ccg	gcc	gat	aat	624	
Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	Asn		
		195					200					205					
ttt	gaa	ggg	cag	ggg	tgg	cga	ctc	ctt	gcg	ccc	atc	acg	gcc	tac	tcc	672	
Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser		
		210				215					220						
caa	cag	aca	cgg	ggc	cta	ctt	ggg	tgc	atc	atc	acc	agc	ctc	aca	ggc	720	
Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly		
		225			230					235					240		
cgg	gac	aag	aac	cag	gtc	gag	ggg	gag	gtt	caa	gtg	gtc	tcc	acc	gct	768	
Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala		
				245					250					255			
aca	caa	tct	ttc	ctg	gcg	acc	tgc	gtc	aac	ggc	gtg	tgt	tgg	act	gtc	816	
Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val		
			260					265					270				
ttc	cat	ggc	gcc	ggc	tca	aag	acc	ttg	gcc	ggc	ccc	aaa	ggc	cca	atc	864	
Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile		
		275					280					285					
acc	cag	atg	tac	act	aat	gtg	gac	cag	gac	ctc	gtc	ggc	tgg	cag	gcg	912	
Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala		
		290				295					300						
ccc	cct	ggg	gcg	cgc	tcc	atg	aca	cca	tgc	acc	tgc	ggc	agc	tcg	gac	960	
Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp		
		305			310					315					320		
ctc	tat	ttg	gtc	acg	aga	cat	gcc	gac	gtc	att	ccg	gtg	cgc	cgg	cgg	1008	
Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg		
				325					330					335			
ggc	gac	agt	agg	ggg	agc	ctg	ctc	tcc	ccc	agg	cct	gtc	tcc	tac	ttg	1056	Gly
Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu			
			340					345					350				

aag ggc tct tcg ggt ggc cca ctg ctc tgc cct tcg ggg cac gct gtg	1104
Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val	
355 360 365	
ggc atc ttc cgg gct gct gtg tgc acc cgg ggg gtt gca aaa gcg gtg	1152
Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val	
370 375 380	
gac ttc ata cct gtt gag tct atg gaa act acc atg cgg act agt agc	1200
Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser Ser	
385 390 395 400	
gct tgg cgt cac ccg cag ttc ggt ggt taa	1230
Ala Trp Arg His Pro Gln Phe Gly Gly *	
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Leu Ile Trp Trp Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu	
35 40 45	
Gln Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile	
50 55 60	
Ile Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr	
65 70 75 80	
Lys Leu Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly	
85 90 95	
Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala	
100 105 110	
Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala	
115 120 125	
Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu	
130 135 140	
Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val	
145 150 155 160	
Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr	
165 170 175	
Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro	
180 185 190	
Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn	

195					200					205					
Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser
210						215					220				
Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly
225					230					235					240
Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala
			245						250					255	
Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val
			260					265					270		
Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile
		275					280					285			
Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala
	290					295					300				
Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp
305					310					315					320
Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg
				325					330					335	
Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu
			340					345					350		
Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val
		355					360					365			
Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val
	370					375					380				
Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg	Thr	Ser	Ser
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Ala	Trp	Arg	His	Pro	Gln	Phe	Gly	Gly							
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 <212> DNA
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<220>
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ggc ata acc aaa gtg ccg tac ttc gtg cgt gcg cag ggg ctc att cgt															96	
Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile	Arg	
			20					25					30			

gcg	tgt	atg	ttg	gtg	cgg	aag	gct	gcg	ggg	ggt	cat	tat	gtc	caa	atg	144
Ala	Cys	Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	
		35					40					45				
gcc	ttc	atg	aag	cta	gct	gcg	ctg	aca	ggt	acg	tac	gtt	tat	gac	cat	192
Ala	Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	
		50					55				60					
ctc	act	cca	ttg	cag	gat	tgg	gcc	cac	gcg	ggc	cta	cga	gac	ctt	gca	240
Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	
		65				70					75				80	
gtg	gcg	gta	gag	ccc	gtc	atc	ttc	tct	gac	atg	gag	gtc	aag	atc	atc	288
Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile	Ile	
				85					90					95		
acc	tgg	ggg	gcg	gac	acc	gcg	gca	tgc	ggg	gac	atc	att	tca	ggg	ctg	336
Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly	Leu	
			100					105					110			
ccc	gtc	tcc	gct	cga	agg	gga	agg	gag	ata	ctc	ctg	gga	ccg	gcc	gat	384
Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	
		115					120					125				
aat	ttt	gaa	ggg	cag	ggg	tgg	cga	ctc	ctt	gcg	ccc	atc	acg	gcc	tac	432
Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	
		130				135					140					
tcc	caa	cag	aca	cgg	ggc	cta	ctt	ggt	tgc	atc	atc	acc	agc	ctc	aca	480
Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	
					150					155					160	
ggc	cgg	gac	aag	aac	cag	gtc	gag	ggg	gag	gtt	caa	gtg	gtc	tcc	acc	528
Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	
				165					170					175		
gct	aca	caa	tct	ttc	ctg	gcg	acc	tgc	gtc	aac	ggc	gtg	tgt	tgg	act	576
Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	
			180					185					190			
gtc	ttc	cat	ggc	gcc	ggc	tca	aag	acc	ttg	gcc	ggc	ccc	aaa	ggc	cca	624
Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	
		195					200					205				
atc	acc	cag	atg	tac	act	aat	gtg	gac	cag	gac	ctc	gtc	ggc	tgg	cag	672
Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	
		210				215					220					
gcg	ccc	cct	ggg	gcg	cgc	tcc	atg	aca	cca	tgc	acc	tgc	ggc	agc	tcg	720
Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	
						230				235					240	
gac	ctc	tat	ttg	gtc	acg	aga	cat	gcc	gac	gtc	att	ccg	gtg	cgc	cgg	768
Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	
				245					250					255		
cgg	ggc	gac	agt	agg	ggg	agc	ctg	ctc	tcc	ccc	agg	cct	gtc	tcc	tac	816
Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	
			260					265					270			

ttg aag ggc tct tcg ggt ggc cca ctg ctc tgc cct tcg ggg cac gct	864
Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala	
275 280 285	
gtg ggc atc ttc cgg gct gct gtg tgc acc cgg ggg gtt gca aaa gcg	912
Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala	
290 295 300	
gtg gac ttc ata cct gtt gag tct atg gaa act acc atg cgg act agt	960
Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser	
305 310 315 320	
agc gct tgg cgt cac ccg cag ttc ggt ggt aaa aag aaa aag taa	1005
Ser Ala Trp Arg His Pro Gln Phe Gly Gly Lys Lys Lys Lys *	
325 330	
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Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met	
35 40 45	
Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His	
50 55 60	
Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala	
65 70 75 80	
Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile	
85 90 95	
Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu	
100 105 110	
Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp	
115 120 125	
Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr	
130 135 140	
Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr	
145 150 155 160	
Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr	
165 170 175	
Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr	
180 185 190	

Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro
 195 200 205
 Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln
 210 215 220
 Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser
 225 230 235 240
 Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg
 245 250 255
 Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr
 260 265 270
 Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala
 275 280 285
 Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala
 290 295 300
 Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg Thr Ser
 305 310 315 320
 Ser Ala Trp Arg His Pro Gln Phe Gly Gly Lys Lys Lys Lys
 325 330

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<400> 5
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20

<210> 6
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 cat 63

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46

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<213> HCV

<400> 8

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45

<210> 9

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<213> HCV

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45

<210> 10

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<212> PRT

<213> HCV

<400> 10

Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile
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Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln
20 25 30

Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp
35 40 45

His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu
50 55 60

Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile
65 70 75 80

Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly
85 90 95

Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala
100 105 110

Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala
115 120 125

Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu
130 135 140

Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser
145 150 155 160

Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp
165 170 175

Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly
180 185 190

Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp
195 200 205

Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser
 210 215 220
 Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
 225 230 235 240
 Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser
 245 250 255
 Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His
 260 265 270
 Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys
 275 280 285
 Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
 290 295 300

<210> 11
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<400> 11

Met Ala Ala Ser Cys Gly Gly Ala Val Phe Ile Gly Leu Ala Leu Leu
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 Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg Leu Ile Trp Trp
 20 25 30
 Leu Gln Tyr Leu Ile Thr Arg Val Glu Ala His Leu Gln Val Trp Ile
 35 40 45
 Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile Ile Leu Leu Thr
 50 55 60
 Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr Lys Leu Leu Leu
 65 70 75 80
 Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly Ile Thr Lys Val
 85 90 95
 Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val
 100 105 110
 Arg Lys Ala Ala Gly Gly His Tyr Val Gln Met Ala Phe Met Lys Leu
 115 120 125
 Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln
 130 135 140
 Asp Trp Ala His Ala Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro
 145 150 155 160
 Val Ile Phe Ser Asp Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp
 165 170 175
 Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg
 180 185 190

Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln
 195 200 205
 Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg
 210 215 220
 Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn
 225 230 235 240
 Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe
 245 250 255
 Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val Phe His Gly Ala
 260 265 270
 Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr
 275 280 285
 Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala
 290 295 300
 Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val
 305 310 315 320
 Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg
 325 330 335
 Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser
 340 345 350
 Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg
 355 360 365
 Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro
 370 375 380
 Val Glu Ser Met Glu Thr Thr Met Arg
 385 390

<210> 12
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 <212> PRT
 <213> HCV

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 Ala Leu Leu Thr Leu Ser Pro Tyr Tyr Lys Val Leu Leu Ala Arg Leu
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 Val Trp Ile Pro Pro Leu Asn Val Arg Gly Gly Arg Asp Ala Ile Ile
 35 40 45
 Leu Leu Thr Cys Ala Val His Pro Glu Leu Ile Phe Asp Ile Thr Lys
 50 55 60
 Leu Leu Leu Ala Ile Phe Gly Pro Leu Met Val Leu Gln Ala Gly Ile

65					70					75				80	
Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu	Ile	Arg	Ala	Cys
				85					90					95	
Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val	Gln	Met	Ala	Phe
			100					105					110		
Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr	Asp	His	Leu	Thr
		115					120					125			
Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp	Leu	Ala	Val	Ala
	130					135					140				
Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys	Ile	Ile	Thr	Trp
145					150					155					160
Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser	Gly	Leu	Pro	Val
				165					170					175	
Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala	Asp	Asn	Phe
			180					185					190		
Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala	Tyr	Ser	Gln
		195					200					205			
Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu	Thr	Gly	Arg
	210					215					220				
Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser	Thr	Ala	Thr
225					230					235					240
Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp	Thr	Val	Phe
				245					250					255	
His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly	Pro	Ile	Thr
			260					265					270		
Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp	Gln	Ala	Pro
		275					280					285			
Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser	Ser	Asp	Leu
	290					295					300				
Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg	Arg	Arg	Gly
305					310					315					320
Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser	Tyr	Leu	Lys
				325					330					335	
Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His	Ala	Val	Gly
			340					345					350		
Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys	Ala	Val	Asp
		355					360					365			
Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg				
	370					375					380				

<210> 13
 <211> 352
 <212> PRT
 <213> HCV

<400> 13

Ala	His	Leu	Gln	Val	Trp	Ile	Pro	Pro	Leu	Asn	Val	Arg	Gly	Gly	Arg
1				5					10					15	
Asp	Ala	Ile	Ile	Leu	Leu	Thr	Cys	Ala	Val	His	Pro	Glu	Leu	Ile	Phe
			20					25					30		
Asp	Ile	Thr	Lys	Leu	Leu	Leu	Ala	Ile	Phe	Gly	Pro	Leu	Met	Val	Leu
		35					40					45			
Gln	Ala	Gly	Ile	Thr	Lys	Val	Pro	Tyr	Phe	Val	Arg	Ala	Gln	Gly	Leu
	50					55					60				
Ile	Arg	Ala	Cys	Met	Leu	Val	Arg	Lys	Ala	Ala	Gly	Gly	His	Tyr	Val
65					70					75					80
Gln	Met	Ala	Phe	Met	Lys	Leu	Ala	Ala	Leu	Thr	Gly	Thr	Tyr	Val	Tyr
				85					90					95	
Asp	His	Leu	Thr	Pro	Leu	Gln	Asp	Trp	Ala	His	Ala	Gly	Leu	Arg	Asp
			100					105					110		
Leu	Ala	Val	Ala	Val	Glu	Pro	Val	Ile	Phe	Ser	Asp	Met	Glu	Val	Lys
		115					120					125			
Ile	Ile	Thr	Trp	Gly	Ala	Asp	Thr	Ala	Ala	Cys	Gly	Asp	Ile	Ile	Ser
		130				135						140			
Gly	Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro
145					150					155					160
Ala	Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr
				165					170					175	
Ala	Tyr	Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser
			180					185						190	
Leu	Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val
		195					200					205			
Ser	Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys
		210				215					220				
Trp	Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys
225					230					235					240
Gly	Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly
				245					250					255	
Trp	Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly
			260					265					270		
Ser	Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val
		275					280					285			

Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val
 290 295 300
 Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly
 305 310 315 320
 His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala
 325 330 335
 Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
 340 345 350

<210> 14
 <211> 341
 <212> PRT
 <213> HCV

<400> 14
 Val Arg Gly Gly Arg Asp Ala Ile Ile Leu Leu Thr Cys Ala Val His
 1 5 10 15
 Pro Glu Leu Ile Phe Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe Gly
 20 25 30
 Pro Leu Met Val Leu Gln Ala Gly Ile Thr Lys Val Pro Tyr Phe Val
 35 40 45
 Arg Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala
 50 55 60
 Gly Gly His Tyr Val Gln Met Ala Phe Met Lys Leu Ala Ala Leu Thr
 65 70 75 80
 Gly Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln Asp Trp Ala His
 85 90 95
 Ala Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser
 100 105 110
 Asp Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
 115 120 125
 Gly Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
 130 135 140
 Ile Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu
 145 150 155 160
 Leu Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly
 165 170 175
 Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
 180 185 190
 Glu Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys
 195 200 205
 Val Asn Gly Val Cys Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr
 210 215 220

Leu Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp
 225 230 235 240
 Gln Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr
 245 250 255
 Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala
 260 265 270
 Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu
 275 280 285
 Ser Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
 290 295 300
 Leu Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
 305 310 315 320
 Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met
 325 330 335
 Glu Thr Thr Met Arg
 340

<210> 15
 <211> 292
 <212> PRT
 <213> HCV

<400> 15
 Ala Gln Gly Leu Ile Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly
 1 5 10 15
 Gly His Tyr Val Gln Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly
 20 25 30
 Thr Tyr Val Tyr Asp His Leu Thr Pro Leu Gln Asp Trp Ala His Ala
 35 40 45
 Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp
 50 55 60
 Met Glu Val Lys Ile Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly
 65 70 75 80
 Asp Ile Ile Ser Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile
 85 90 95
 Leu Leu Gly Pro Ala Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu
 100 105 110
 Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys
 115 120 125
 Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu
 130 135 140
 Val Gln Val Val Ser Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val

145		150		155		160
Asn Gly Val Cys Trp Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu						
	165			170		175
Ala Gly Pro Lys Gly Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln						
	180			185		190
Asp Leu Val Gly Trp Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro						
	195			200		205
Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp						
	210			215		220
Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser						
	225			230		235
Pro Arg Pro Val Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu						
		245		250		255
Cys Pro Ser Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr						
	260			265		270
Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu						
	275			280		285
Thr Thr Met Arg						
	290					

<210> 16
 <211> 303
 <212> PRT
 <213> HCV

<400> 16

Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile																
1				5					10						15	
Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln																
			20					25						30		
Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp																
			35					40					45			
Ala Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu																
			50				55					60				
Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile																
			65				70				75					80
Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly																
				85					90						95	
Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala																
			100						105						110	
Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala																
			115						120					125		

Tyr Ser Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu
 130 135 140
 Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser
 145 150 155
 Thr Ala Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp
 165 170 175
 Thr Val Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly
 180 185 190
 Pro Ile Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp
 195 200 205
 Gln Ala Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser
 210 215 220
 Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg
 225 230 235 240
 Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser
 245 250 255
 Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His
 260 265 270
 Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys
 275 280 285
 Ala Val Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
 290 295 300

<210> 17
 <211> 301
 <212> PRT
 <213> HCV

<400> 17

Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile
 1 5 10 15
 Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln
 20 25 30
 Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp
 35 40 45
 His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu
 50 55 60
 Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile
 65 70 75 80
 Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Ser Gly
 85 90 95
 Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala
 100 105 110

Asp Asn Phe Glu Gly Gln Gly Trp Arg Leu Pro Ile Thr Ala Tyr Ser
 115 120 125
 Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly
 130 135 140
 Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Val Val Ser Thr Ala
 145 150 155 160
 Thr Gln Ser Phe Leu Ala Thr Cys Val Asn Gly Val Cys Trp Thr Val
 165 170 175
 Phe His Gly Ala Gly Ser Lys Thr Leu Ala Gly Pro Lys Gly Pro Ile
 180 185 190
 Thr Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Gln Ala
 195 200 205
 Pro Pro Gly Ala Arg Ser Met Thr Pro Cys Thr Cys Gly Ser Ser Asp
 210 215 220
 Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg
 225 230 235 240
 Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro Val Ser Tyr Leu
 245 250 255
 Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ser Gly His Ala Val
 260 265 270
 Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val
 275 280 285
 Asp Phe Ile Pro Val Glu Ser Met Glu Thr Thr Met Arg
 290 295 300

<210> 18
 <211> 303
 <212> PRT
 <213> HCV

<400> 18

Ala Gly Ile Thr Lys Val Pro Tyr Phe Val Arg Ala Gln Gly Leu Ile
 1 5 10 15
 Arg Ala Cys Met Leu Val Arg Lys Ala Ala Gly Gly His Tyr Val Gln
 20 25 30
 Met Ala Phe Met Lys Leu Ala Ala Leu Thr Gly Thr Tyr Val Tyr Asp
 35 40 45
 His Leu Thr Pro Leu Gln Asp Trp Ala His Ala Gly Leu Arg Asp Leu
 50 55 60
 Ala Val Ala Val Glu Pro Val Ile Phe Ser Asp Met Glu Val Lys Ile
 65 70 75 80
 Ile Thr Trp Gly Ala Asp Thr Ala Ala Ala Gly Asp Ile Ile Ser Gly

85										90					95						
Leu	Pro	Val	Ser	Ala	Arg	Arg	Gly	Arg	Glu	Ile	Leu	Leu	Gly	Pro	Ala						
			100					105					110								
Asp	Asn	Phe	Glu	Gly	Gln	Gly	Trp	Arg	Leu	Leu	Ala	Pro	Ile	Thr	Ala						
		115					120					125									
Tyr	Ser	Gln	Gln	Thr	Arg	Gly	Leu	Leu	Gly	Cys	Ile	Ile	Thr	Ser	Leu						
	130					135					140										
Thr	Gly	Arg	Asp	Lys	Asn	Gln	Val	Glu	Gly	Glu	Val	Gln	Val	Val	Ser						
145					150					155					160						
Thr	Ala	Thr	Gln	Ser	Phe	Leu	Ala	Thr	Cys	Val	Asn	Gly	Val	Cys	Trp						
				165					170					175							
Thr	Val	Phe	His	Gly	Ala	Gly	Ser	Lys	Thr	Leu	Ala	Gly	Pro	Lys	Gly						
			180					185					190								
Pro	Ile	Thr	Gln	Met	Tyr	Thr	Asn	Val	Asp	Gln	Asp	Leu	Val	Gly	Trp						
		195					200					205									
Gln	Ala	Pro	Pro	Gly	Ala	Arg	Ser	Met	Thr	Pro	Cys	Thr	Cys	Gly	Ser						
	210					215					220										
Ser	Asp	Leu	Tyr	Leu	Val	Thr	Arg	His	Ala	Asp	Val	Ile	Pro	Val	Arg						
225					230					235					240						
Arg	Arg	Gly	Asp	Ser	Arg	Gly	Ser	Leu	Leu	Ser	Pro	Arg	Pro	Val	Ser						
				245					250					255							
Tyr	Leu	Lys	Gly	Ser	Ser	Gly	Gly	Pro	Leu	Leu	Cys	Pro	Ser	Gly	His						
		260						265					270								
Ala	Val	Gly	Ile	Phe	Arg	Ala	Ala	Val	Cys	Thr	Arg	Gly	Val	Ala	Lys						
		275					280					285									
Ala	Val	Asp	Phe	Ile	Pro	Val	Glu	Ser	Met	Glu	Thr	Thr	Met	Arg							
	290					295					300										

<210> 19
 <211> 11
 <212> PRT
 <213> HCV

<220>
 <221> VARIANT
 <222> (1)...(1)
 <223> Asp labeled with anthranilyl

<221> VARIANT
 <222> (6)...(6)
 <223> Xaa at position 6 is Abu

<221> VARIANT
 <222> (6)...(7)
 <223> Abu-A between 6 and 7 is C(O)-O
 <221> VARIANT

<222> (9)...(9)
<223> Tyr at position 9 is derivatized with 3-NO2

<400> 19
Asp Asp Ile Val Pro Xaa Ala Met Tyr Thr Trp
1 5 10

<210> 20
<211> 6
<212> PRT
<213> HCV

<220>
<221> VARIANT
<222> (1)...(1)
<223> Asp labeled with anthranilyl

<221> VARIANT
<222> (6)...(6)
<223> Xaa at position 6 is Abu

<400> 20
Asp Asp Ile Val Pro Xaa
1 5

<210> 21
<211> 10
<212> PRT
<213> HCV

<400> 21
Ser Phe Glu Gly Gln Gly Trp Arg Leu Leu
1 5 10

<210> 22
<211> 20
<212> PRT
<213> HCV

<400> 22
Ser Phe Glu Gly Gln Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr
1 5 10 15

Ser Gln Gln Thr
20

<210> 23
<211> 10
<212> PRT
<213> HCV

<400> 23
Ala Pro Ile Thr Ala Tyr Ser Gln Gln Thr
1 5 10

<210> 24
<211> 12
<212> PRT
<213> HCV

<400> 24
Lys Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr
1 5 10

<210> 25
<211> 6
<212> PRT
<213> HCV

<400> 25
Ala Pro Ile Thr Ala Tyr
1 5
